

CLAIMS

1.- An oxide cathode for an electron gun comprising

5 a mixture of such oxides,

- a metallic substrate (1) having a top face (111) onto which the cathodo-emissive layer (3) is deposited, and a bottom face (122) opposite to said top face, containing a plurality of reducing agents which are able to reduce said oxides under conditions of operation of said electron gun, said plurality including

10 a first reducing agent Mg and a second reducing agent Si or Al,
characterized in that :

- on the said top face (111), the Mg weight concentration is superior to 0.005 %, the second reducing agent weight concentration is inferior or equal to 0.025 %, and the refractory metals weight concentration is inferior or equal to 3
15 %, where so-called refractory metals are selected from the group consisting of W, Mo, Re,

- on the said bottom face (122), the Mg weight concentration is inferior to the Mg weight concentration on the said top face, and the second reducing agent weight concentration is superior to the second reducing agent weight
20 concentration on the said top face and superior to 0.02 %,

- the thickness E of the said metallic substrate is inferior or equal to 100 μ m.

2.- An oxide cathode according to claim 1 characterized in that :

25 - from the said top face (111) up to a top depth of at least 20 μ m into said substrate, the Mg weight concentration related to this top face is superior to 0.005 %, the second reducing agent weight concentration related to this top face is inferior or equal to 0.025 %, and the refractory metals weight concentration related to this top face is inferior or equal to 3 % ,

30 - from the said bottom face (122) up to a bottom depth of at least 10 μ m into said substrate, the Mg weight concentration related to this bottom face is inferior to the said Mg weight concentration related to the top face, and the second reducing agent weight concentration related to this bottom face is

superior to the said second reducing agent weight concentration related to the top face and is superior to 0.02 %.

3.- An oxide cathode according to any one of the preceding claims,
5 characterized in that the Mg weight concentration related to the bottom face is inferior or equal to 0.004 %.

4.- An oxide cathode according to any one of the preceding claims,
characterized in that the second reducing agent weight concentration related to
10 the top face is superior to 0.01 %.

5.- An oxide cathode according to any one of the preceding claims,
characterized in that the second reducing agent weight concentration related to
the bottom face is superior to 0.05 %.

15 6.- An oxide cathode according to any one of the preceding claims,
characterized in that the second reducing agent weight concentration related to
the bottom face is inferior to 0.2 %.

20 7.- An oxide cathode according to any one of the preceding claims,
characterized in that, from the said bottom face (122) up to a depth of at 15 μm
into said substrate, the Cr weight concentration is superior or equal to 12 %.

8.- An oxide cathode according to any of claims 2 to 7, characterized in
25 that the said substrate (1) comprises two superimposed bonded metallic layers :
a top layer (11) and a bottom layer (12).

9.- An oxide cathode according to claim 8, characterized in that the said
bottom layer (12) is made of nichrome.

30 10.- An oxide cathode according to any one of the preceding claims,
characterized in that alkaline earth oxides are selected from the group
consisting of BaO, SrO and CaO or BaO, SrO.

11.- An oxide cathode according to any one of the preceding claims, characterized in that said plurality of reducing agents further includes elements which are selected from the group consisting of Cr and Zr.

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12.- An oxide cathode according to any one of claims 1 to 11, characterized in that it is a "one-piece" cathode.

13.- An oxide cathode according to any one of claims 1 to 11,
10 characterized in that it is a "two-piece" cathode.

14.- Electron gun having an electron source characterized in that said electron source is a cathode according to any one of the preceding claims.

15 15.- Cathode-ray tube characterized in that it includes at least an electron gun according to claim 14.